JOHN F. KENNEDY SPACE CENTER

LAUNCH SERVICES PROGRAM

NASA
LAUNCH SERVICES PROGRAM

DISCOVERY 2014 AO
AO CONCEPT STUDY KICK-OFF
NOVEMBER 9, 2015

Diana Manent Calero
Flight Projects Office

JOHN F. KENNEDY SPACE CENTER

Launch Services Program

LAUNCH SERVICES PROGRAM

NASA Strategic Plan 2014

Strategic Goal 3:
Serve the American public and accomplish our Mission by effectively managing our people, technical capabilities, and infrastructure.

Objective 3.2:
Ensure the availability and continued advancement of strategic, technical, and programmatic capabilities to sustain NASA's Mission

Key Strategy:
Provide access to space

Lead Office: **HEOMD**
Contributing Program: **LSP**

Key Strategy "Provide access to space" citation:

"…certify and procure domestic commercial space transportation services for the launch of robotic science, communication, weather, and other civil sector missions"

"…provide robust, reliable, commercial and cost-effective launch services"

"…assured access to space through a competitive 'mixed Fleet' approach utilizing the breadth of U.S. industry's capabilities"

LSP Strategic Goals 2014

Goal 1: Maximize Mission Success

Goal 2: Assure Long-Term Launch Services

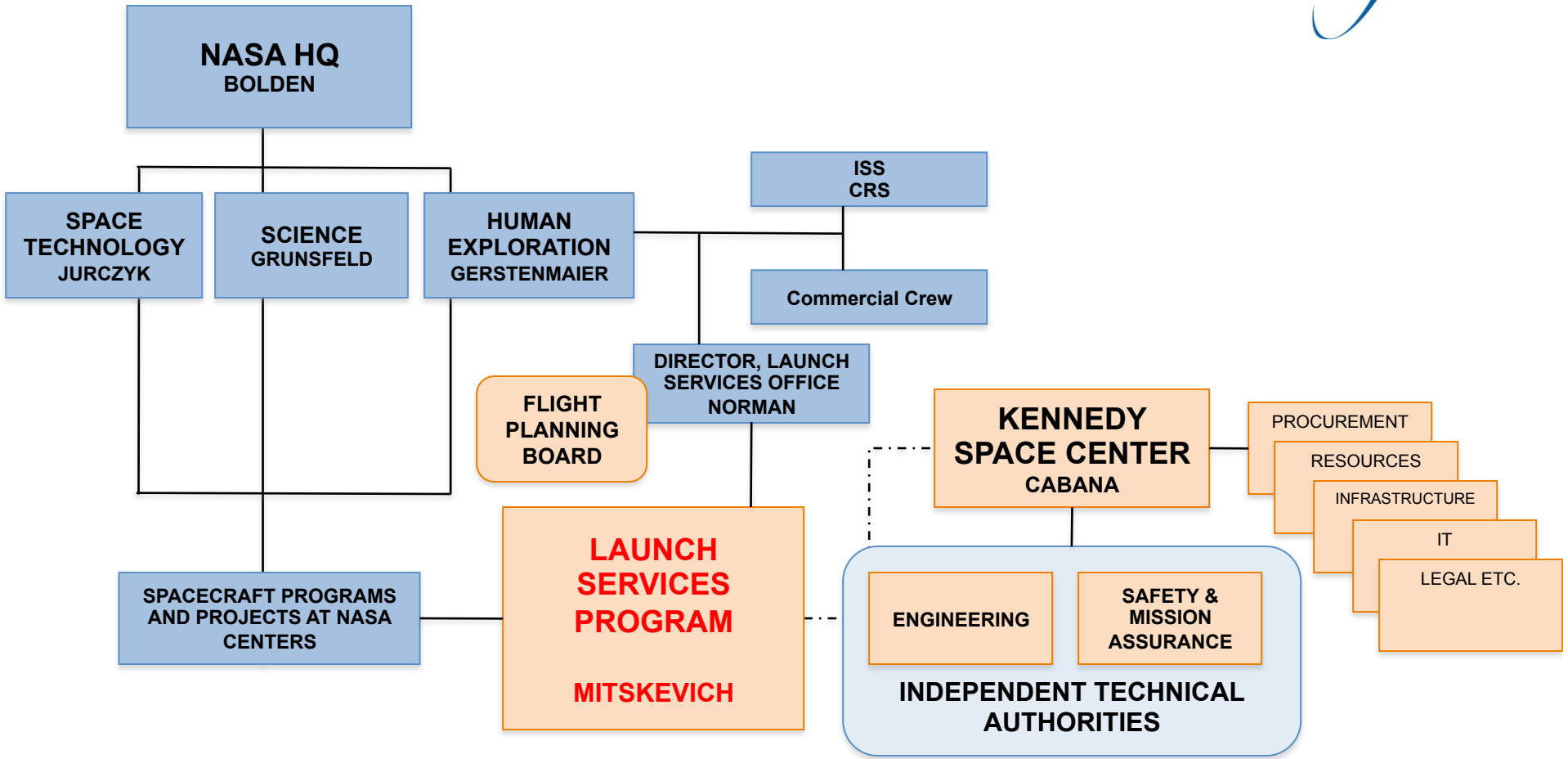
Goal 3: Promote Evolution of a U.S. Commercial Space Launch Market

Goal 4: Continually Enhance LSP's Core Capabilities

Launch Services Program Relationships (NASA/HEOMD/KSC)

JOHN F. KENNEDY SPACE CENTER

LAUNCH SERVICES PROGRAM



Interfaces to other NASA Centers

- SSC PROPULSION SUPPORT
- MSFC, GRC TECHNICAL SUPPORT

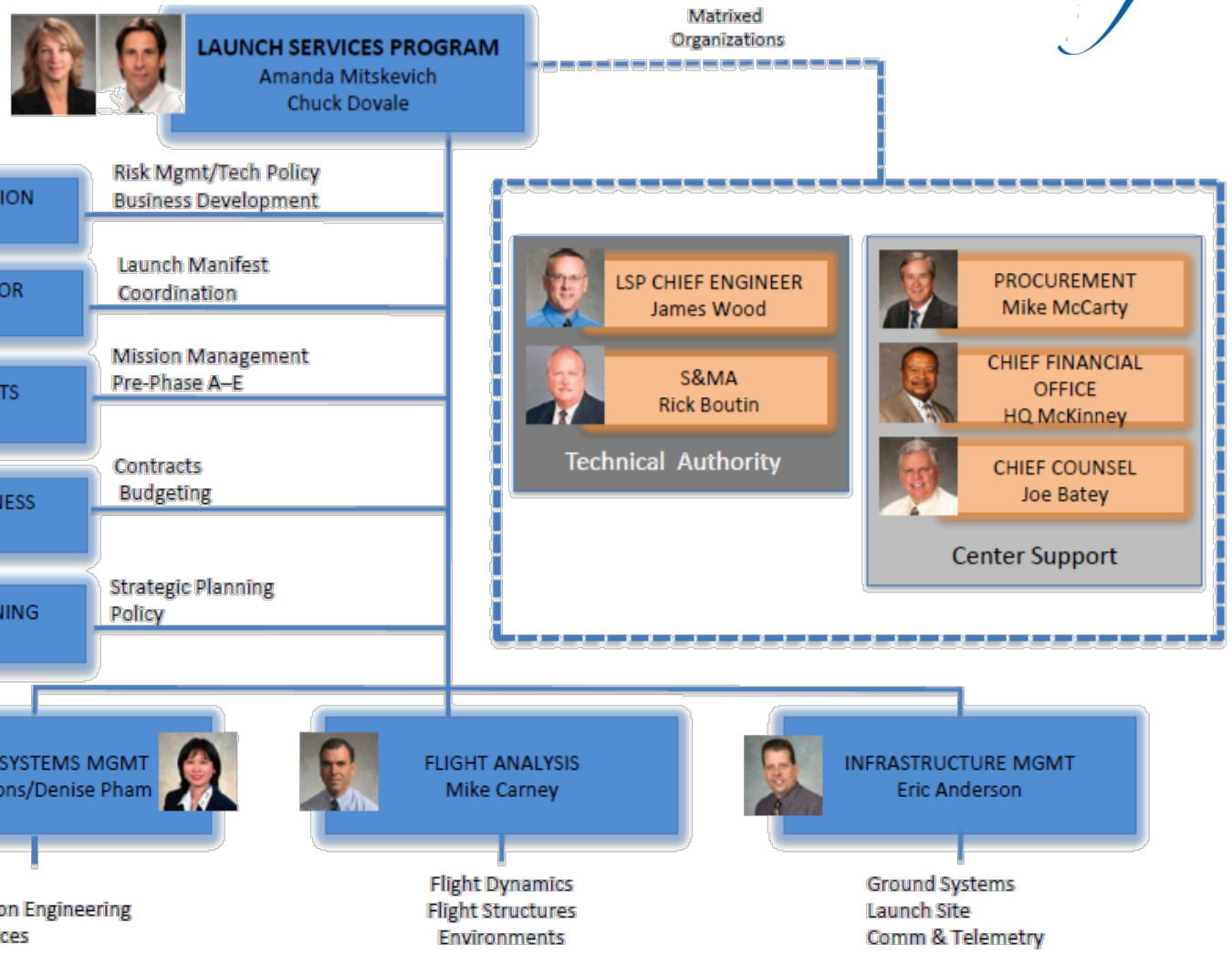
Support Contractor Interface

- ELVIS (AI Solutions) SUPPORT CONTRACTOR

JOHN F. KENNEDY SPACE CENTER

LSP Organizational Structure

LAUNCH SERVICES PROGRAM



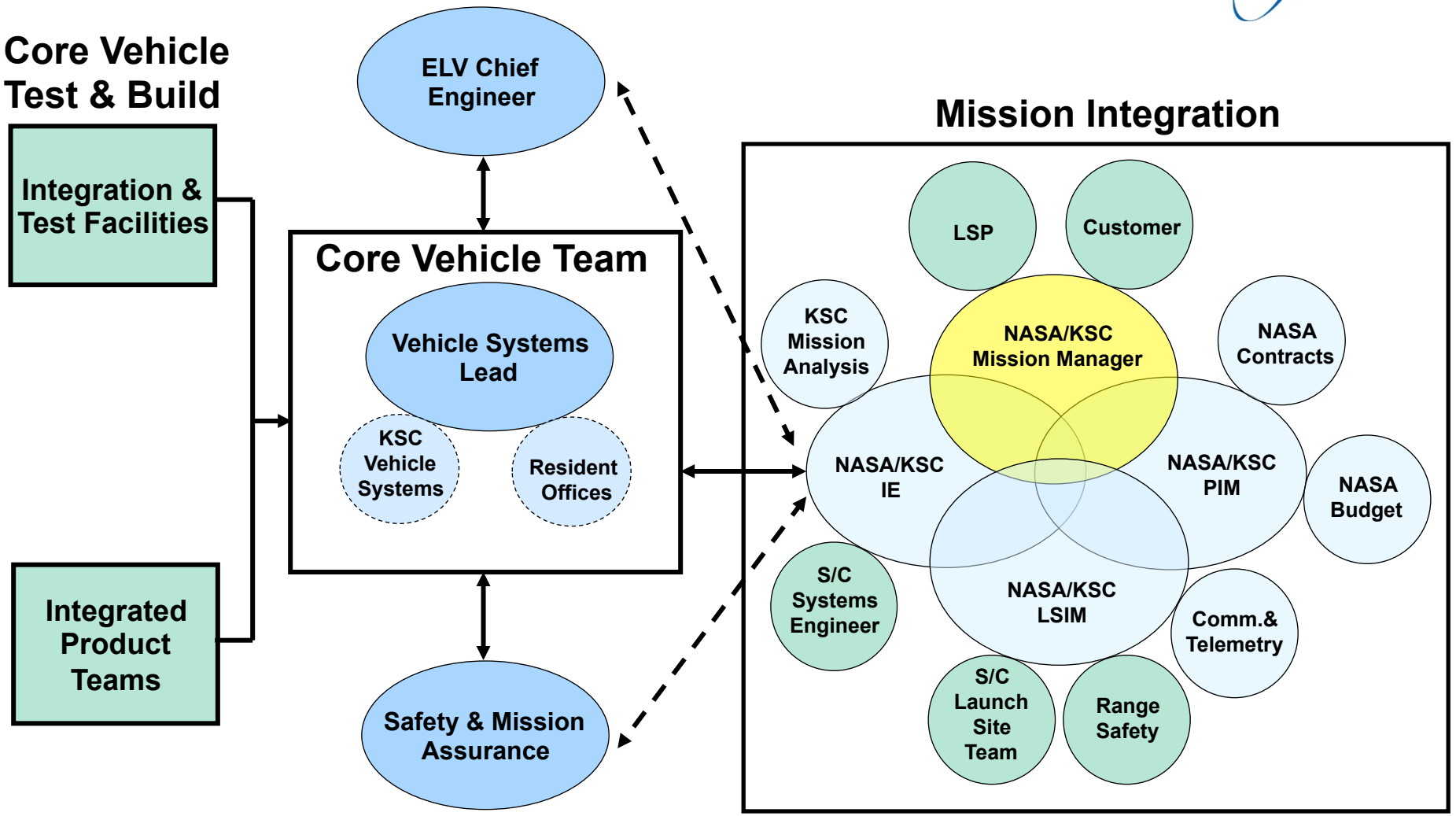
LSP Functional Structure

- LSP procures/provides a Launch Service
  - Its more than the basic launch vehicle
  - We don't buy a tail number
  - This is a commercial FFP procurement with additional insight and oversight
- To enable this, LSP has two functional sides
  - Mission integration
    - » Mission Integration Team (MIT) assigned to each mission
    - » Manages mission specific procurement, integration, and analysis
    - » Includes launch site integration and processing
  - Fleet management
    - » Personnel assigned to each contracted rocket
    - » Includes resident offices within the production facilities of all active providers
    - » We watch the production and performance of entire fleet – we certify the manufacture's production line, not just a particular unit (tail number)
    - » We have a say in any change/upgrade/anomaly
- LSP maintains the final go or no-go for launch
- Interface with Safety and Mission Assurance
  - Safety
  - Quality

JOHN F. KENNEDY SPACE CENTER

Technical Information flow into the MIT

LAUNCH SERVICES PROGRAM



NASA Provided Launch Services

- The NLS II Contract is LSP's primary method to acquire all classes of Category 2 and Category 3 commercial launch services for spacecraft customers
- Provides NASA with domestic launch services that are safe, successful, reliable, and affordable
- Provides services for both NASA-Owned and NASA-Sponsored payloads through multiple Indefinite Delivery Indefinite Quantity (IDIQ) Launch Service Task Order (LSTO) contracts with negotiated Not To Exceed (NTE) Prices
- Provides services on a Firm-Fixed-Price (FFP) basis
  - Incorporates best commercial practices to the maximum extent practical
  - Includes Standard and Non-Standard services
  - Mission unique modifications
  - Special studies
- Allows LSP to turn on a Task Assignment or Non-Standard Service at any time for analyses

NLS II Contracts Overview

- Launch Services Risk Mitigation Policy for NASA-owned and/or NASA-sponsored Payloads/Missions can be found under NPD 8610.7. Document can be found at http://nodis3.gsfc.nasa.gov
  - Risk Category 1: Low complexity and/or low cost payloads-Classified as Class D payloads pursuant to NPR 8705.4
  - Risk Category 2: Moderate complexity and/or moderate cost payloads-Classified as Class C payloads and, in some cases, Class B payloads, pursuant to NPR 8705.4
  - Risk Category 3: Complex and/or high cost payloads-Classified as Class A payloads and, in some cases, Class B payloads, pursuant to NPR 8705.4
- NLS II Launch Service Payment, Milestone & Completion Criteria
  - Authority to Proceed (ATP) concurrent with Task Order Award
  - Cumulative payment of 10% due at L-30 (Nominal)
  - Nominal Mission Integration begins at L-30 months, with quarterly milestone payments
    - » NTE will be based on the L-30 date, not the LSTO order year
    - » Includes the capability to begin payments at L-33 or L-27 months with no change to Firm-Fixed-Price
  - Each NLS II Contract has standardized work plans tied to the milestone payment. Each work plan varies based on unique vehicle configuration differences.
    - » In the event a contractor completes a milestone ahead of the completion date, the contractor may submit an invoice for Government consideration
  - Modified payment schedule may be negotiated through bilateral agreement

NLS II Contracts Overview

- Each Provider has their own unique Launch Delay Table
  - Delay terms are identical for both parties (Contractor/NASA)
  - No-fault Launch delays
    - » Include: range constraints, floods, acts of God, strikes and other conditions
    - » No adjustment made to mission price
    - » No limit on number of days
- For the remaining delay cases grace days are based on sliding scale for both Contractor and NASA delays
  - 150 days of grace at ATP through L-24
  - Sliding down to 7 days of grace at L-10 days

Launch Services Program Budget

The Launch Services Program provides:

- Procurement and Management of the launch service
- Technical insight/oversight of the launch vehicle production/ test
  - Mission Integration Management and engineering support
  - Oversight of Mission unique launch vehicle hardware/software development – approval of Mission Unique Reviews
- Launch campaign/countdown management – Formal Readiness Reviews
- Risk Management for Launch Service
- Downrange telemetry assets for launch vehicle data
- Budget does not include launch delay

Launch Services Program Budget

- **Integrated Services:**
  - Payload processing facility and support
  - Range support and services
  - Contractor engineering support
  - Base Support Contracts
  - Logistics
  - Hazardous support

- **Standard Services:**
  - "Baseline" launch vehicle based on a medium performance with a 4-m payload fairing (credit for low performance with a 4-m fairing)
  - Payload Fairing with 2 access doors with thermal/acoustic blankets
  - Payload Separation System
  - Payload Adapter with availability of test payload adapter
  - Electrical Interface Connectors (approximately 3 sets)
  - Collision/Contamination Avoidance Maneuver (CCAM) capability
  - Spaceraft Spin/De-spin capabaliity

JOHN F. KENNEDY SPACE CENTER

Launch Services Program Budget

LAUNCH SERVICES PROGRAM

- **Non Standard Launch Services are NOT covered under the LSP budget and cost must be included in the PI-Managed Mission Cost:**
  - **Nuclear Launch services utilizing a Radioisotope Heater Unit (RHU) – detailed list included in the ELV LSP Information Summary - $11M**
  - **Enhanced contamination control, planetary protection, operational clean enclosures**
  - **Cameras on the LV**
  - **Extended mission integration periods (in excess of 33 months)**
  - **LV HW modifications required to accommodate unique payload configuration**
  - **Non-"baseline" launch vehicle based on high performance curve for a 4-m payload fairing or any performance for a 5-m payload fairing**

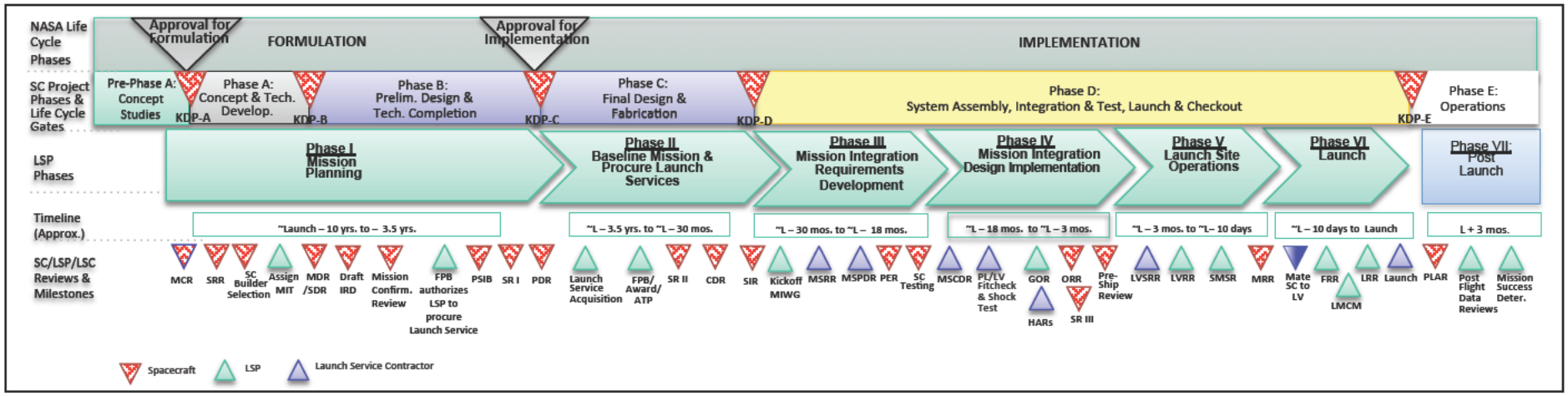
	4m	5m
Low	($16M)	$13M
Med	Baseline	$28M
High	$14M	$43M

JOHN F. KENNEDY SPACE CENTER

Ground Rules

LAUNCH SERVICES PROGRAM

- **Any domestic expendable launch vehicle proposed for this AO will be procured and managed by the NASA/Launch Services Program (LSP) via the NASA Launch Services II (NLS II) contract.**
- **The LSP will competitively select a launch service provider for these missions based on customer requirements and NASA Flight Planning Board (FPB) approval.**



Spacecraft reviews shown in red.

Available Vehicles under NLS II

- Most likely candidate vehicles for the Discovery AO that are available on the NLS II contract are
  - Atlas V
  - Falcon 9 v1.1
- Bidders must remain compatible with vehicles that provide their performance requirements
- LSP uses the NLS II contract and not the launch vehicle providers users guides when determining LV configurations and performance
- Assumption of a specific launch vehicle configuration as part of this AO proposal will not guarantee that the proposed LV configuration will be selected for award of a launch service competitive procurement
  - Firm technical rationale for sole source justification is required in the proposal, and NASA would have to obtain appropriate approvals

Available Vehicles under NLS II

- The Agency policy, NPD 8610.7, "Risk Mitigation Policy for NASA-Owned and/or NASA-Sponsored Payloads/Mission" has been modified so newer launch service providers are eligible earlier to compete for any of NASA's missions
  - Requires one successful launch of vehicle configuration in order to bid for a proposal
- Launch Services Program initiates the procurement of a launch service under the NLSII contract via a Launch Services Task Order (LSTO)

LSTO Process

- **HQ Flight Planning Board (FPB) notifies LSP of mission requirement**
  - **Launch Services Interface Requirements Document (LSIRD) has already been developed by Spacecraft Customer & provided to HQ FPB and to LSP (LSP works with Spacecraft Customer to develop LSIRD)**
- **Launch Services Program Manager notifies procurement officer of requirement and provides recommended technical personnel for LSTO evaluation team**
- **Procurement officer establishes LSTO evaluation team with designated contracting officer and lead tech evaluator**
  - **Note that the team includes up to 2 or 3 reps from the spacecraft project team**
- **LSTO evaluation team performs the following:**
  - **Develop tech requirements based on mission definition**
  - **Assures FAR guidelines are being followed**
  - **Determines and documents LSTO evaluation criteria**
  - **CO issues Request for Launch Services Proposal (RLSP) to multiple award contractors**

LSTO Process

- **LSTO eval team performs the following (cont'd):**
  - **Evaluate contractor proposals in accordance with LSTO procedures**
  - **Complete evaluation and brief to Procurement officer, LSP Program Manager, FPB, sponsoring Program/Project on evaluation results**
  - **Verify status of Authority To Proceed (ATP)**
- **Launch Services Program Manager makes selection and coordinates with KSC Contracting Officer (CO)**
- **KSC CO awards LSTO for mission launch service**

Summary

- **It is the Launch Services Program's goal to ensure the highest practicable probability of mission success while managing the launch service technical capabilities, budget and schedule.**

- **Questions must be officially submitted to:**

Diana Manent Calero
Mission Manager
NASA Launch Services Program
Code VA-C
Kennedy Space Center, Fl. 32899
Phone: 321-867-8197
Email: Diana.M.Calero@nasa.gov